

**17<sup>th</sup> CHRIS MEETING**  
**Rostock, Germany, 5-9 September 2005**

**TERMS OF REFERENCE FOR CHRIS COMMITTEE**  
**and Related Working Groups**  
*(September 2005)*

**I. COMMITTEE ON HYDROGRAPHIC REQUIREMENTS FOR INFORMATION SYSTEMS (CHRIS)**

Considering the need to promote and coordinate the development of standards, specifications and guidelines for official hydrographic products and services, to meet the requirements of mariners and other users of hydrographic information, the International Hydrographic Organization establishes a Committee on Hydrographic Requirements for Information Systems (CHRIS) with the following Terms of Reference and Rules of Procedure:

**1. Terms of Reference**

- 1.1 To monitor the requirements of mariners and other users of hydrographic information associated with development and use of paper hydrographic products and electronic information systems that may require data provided by national hydrographic authorities, and identify those technical matters that may affect the activities and products of those authorities.
- 1.2 To study and propose methods and minimum standards for the development and provision of official hydrographic data, nautical products and other related services.
- 1.3 To prepare and maintain publications to describe and promote the recommended methods, standards, specifications and guidelines as adopted by the International Hydrographic Organization, and advise Member States about implementation procedures.
- 1.4 To consider alternative procedures for the timely production of standards, for example by using external expertise when necessary.
- 1.5 To establish and maintain contact with other relevant IHO bodies, such as the Committee on WEND, the Legal Advisory Group, etc, to ensure that IHO activities are coordinated.
- 1.6 To liaise with other relevant international organizations

**2. Rules of Procedure**

- 2.1 The Committee is composed of Representatives of Member States and a representative of the International Hydrographic Bureau.
- 2.2 Accredited NGIO's may attend Committee Meetings.
- 2.3 Meetings shall be held at least once a year. The venue and date will be announced at least three months in advance.
- 2.4 Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the Committee, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.

- 2.5 The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.
- 2.6 The Committee will progress its work primarily through Working Groups, each of which will address specific tasks. Working Groups will operate by correspondence to the maximum extent practicable.
- 2.7 Recommendations of the Committee will be submitted to the IHO Member States for adoption through the Directing Committee.

*Reference: 17<sup>th</sup> CHRIS Meeting, 5-9 September 2005, Rostock, Germany*

## **II. TRANSFER STANDARD MAINTENANCE AND APPLICATIONS DEVELOPMENT W.G. (TSMAD)**

### **1. Objective**

- a) To maintain, develop and extend the IHO transfer standard for digital hydrographic data (currently Special Publication S-57), including development and maintenance of relevant application profiles;
- b) To monitor the development of other related international standards.

### **2. Authority**

The Working Group is a subsidiary of CHRIS and its work is subject to CHRIS approval.

### **3. Procedures**

- a) The WG should:
  - (i) maintain the IHO transfer standard for digital hydrographic data by preparing and promulgating maintenance documents containing clarifications, corrections and extensions when required;
  - (ii) review relevant international standards and specifications and advise CHRIS accordingly;
  - (iii) consider new topics as instructed by CHRIS and advise CHRIS accordingly and/or draft the relevant extension documents;
  - (iv) draft new editions of the IHO transfer standard for digital hydrographic data as instructed by CHRIS.
- b) The WG should work by correspondence, group meetings, workshops or symposia. Permanent or temporary sub-working groups may be created by the WG to undertake detailed work on specific topics such as: maintenance of the IHO transfer standard for digital hydrographic data, product specifications, tidal information, survey information, etc. The WG should meet at least once a year.
- c) The WG should liaise with other CHRIS WG's and other IHO and international bodies as appropriate and as instructed by CHRIS.

### **4. Composition and Chairmanship**

- a) The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGIO Observers.
- b) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d) The WG shall be chaired by a representative of a M/S. The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.

- e) Expert Contributors shall seek approval of membership from the Chairman.
- f) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- g) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- h) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

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### **III. COLOURS AND SYMBOLS MAINTENANCE W.G. (C&SMWG)**

#### **1. Objective**

To maintain IHO specifications for colours, symbols and display rules used to show SENC information on ECDIS in a safe and ergonomic manner.

#### **2. Authority**

This WG is a subsidiary of the Committee on Hydrographic Requirements for Information Systems (CHRIS). Its work is subject to CHRIS approval.

#### **3. Procedures**

a) The WG should:

Maintain Appendix 2 of IHO Special Publication S-52 and its accompanying Presentation Library, by preparing and promulgating maintenance documents when required.

- (i) Perform maintenance of Appendix 2 by immediate amendments for safety related matters and long-term revisions by deferred amendments.
  - (ii) Draft new editions of S-52 Appendix 2 as instructed by CHRIS.
  - (iii) Identify basic scientific fundamentals and provide guidance to ECDIS manufacturers related to colours and symbolization of hydrographic information.
  - (iv) Provide and maintain a framework for display of SENC information that is feasible and practicable within available technology.
  - (v) Coordinate technical exchange between C&SMWG, type-approval authorities, ECDIS manufacturers and ECDIS user community, including the conduction of comprehensive testing and validation of colours and symbolization by manufacturers, and at-sea trials with mariners.
  - (vi) Monitor the operational performance and development of IHO specifications, progress in display technology, and human perception analysis.
  - (vii) Consider new topics and other applications affecting electronic chart display, and/or draft the relevant extension documents.
- b) The WG should work by correspondence, group meetings, workshops or symposia. The WG should meet at least once every two years.
- c) The WG should liaise and harmonize with other ECDIS-related bodies as appropriate (e.g., TSMAD, CSPCWG, IEC, IMO/IHO HGE, IALA, WMO, IACS, NATO, etc.).
- d) The WG should identify a work programme for each year, including expected time frame.

#### **4. Composition and Chairmanship**

- a) The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGO Observers.

- b) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d) The WG shall be chaired by a representative of a M/S. The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.
- e) Expert Contributors shall seek approval of membership from the Chairman.
- f) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- g) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- h) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

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#### **IV. DATA PROTECTION SCHEME W.G. (DPSWG)**

##### **1. Objective**

To develop and maintain an IHO ENC data protection scheme.

##### **2. Authority**

This Working Group (WG) is a subsidiary of the IHO CHRIS. Its work is subject to IHO CHRIS approval.

##### **3. Procedures**

- a) The WG should:
  - (i) Enable immediate preparation of an IHO ENC Data Protection Scheme v.1 with documentation, software kernel and test data modelled on the Primar Security Scheme.
  - (ii) Review international developments in security services to amend and prepare IHO ENC Data Protection Scheme v.2 with industry representatives and other ECDIS standardisation bodies, and allow for a structured transition of the standard into the market.
  - (iii) Develop procedures and information to enable IHO to assume responsibility of the documentation and supporting information and operate as the Security Scheme Administrator. Identify how technical support will be made available to IHO.
- b) The WG will liaise and harmonise with other international ECDIS-related bodies as appropriate;
- c) The WG should work by correspondence, and use group meetings, workshops or symposia only when required.
- d) The WG should identify a work programme for each year, including expected time frame.

##### **4. Composition and Chairmanship**

- a) The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGO Observers.
- b) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d) The WG shall be chaired by a representative of a M/S. The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.
- e) Expert Contributors shall seek approval of membership from the Chairman.
- f) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- g) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- h) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more

collective representatives.

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## **V. STANDARDISATION OF NAUTICAL PUBLICATIONS W.G. (SNPWG)**

### **1. Objective**

To develop guidelines for the preparation of nautical publications, in a digital format compatible with ECDIS.

### **2. Definition**

A Nautical Publication is a special-purpose book, or a specially compiled database, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation. Nautical publications include but are not limited to:

- Distance Tables,
- List of Buoys and Beacons,
- List of Lights,
- List of Radio Signals,
- List of Symbols, Abbreviations and Terms used on Charts,
- Mariners' Handbooks,
- Notices to Mariners,
- Routeing Guides,
- Sailing Directions,
- Tidal Stream Atlases,
- Tide Tables.

Nautical publications can be made available in a paper or a digital format.

### **3. Authority**

This Working Group (WG) is a subsidiary of the Committee on Hydrographic Requirements for Information Systems (CHRIS) and its work is subject to CHRIS approval.

### **4. Procedures**

- a) The WG should:
  - (i) Investigate the data format specifications, content and display requirements of digital nautical publications intended for use in ECDIS.
  - (ii) Draft guidance document(s) and/or revised technical resolutions, as appropriate.
  - (iii) Liaise with relevant IHO Technical WG's to ensure, technical feasibility and compatibility of any developed proposals.
- b) The WG should liaise with other CHRIS WG's and other IHO and international bodies as appropriate and as instructed by CHRIS.

### **5. Composition and Chairmanship**

- a) The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGIO Observers.

- b) The WG should work primarily by correspondence. The WG should attempt to meet at least once every two years, normally in connection with another convenient IHO forum.
- c) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- d) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- e) The WG shall be chaired by a representative of a M/S. The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.
- f) Expert Contributors shall seek approval of membership from the Chairman.
- g) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- h) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- i) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

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**VI. DATA QUALITY W.G. (DQWG) [currently dormant]**

**1. Objective**

To develop appropriate methods of classifying and depicting the quality of digital hydrographic information.

**2. Authority**

The Working Group (WG) is a subsidiary of CHRIS and its work is subject to CHRIS approval.

**3. Procedures**

- a. The WG should:
  - (i) monitor and develop the further use of quality indicators for hydrographic information;
  - (ii) propose methods for the depiction of quality indicators, such as Zones of Confidence (ZOC), on electronic displays;
  - (iii) develop guidance for the implementation of ZOC, covering the education of both the mariner and the cartographer, including the development of documentation and appropriate software;
  - (iv) propose relevant amendments and enhancements for incorporation in future editions of the IHO transfer standard for digital hydrographic data;
  - (v) provide to the relevant IHO Bodies information on the potential use of ZOC in non electronic media (for example, paper charts); and
  - (vi) propose new data quality topics and other applications for consideration by CHRIS.
- b. The WG should work primarily by correspondence. The WG should attempt to meet at least every two years, normally in connection with another convenient IHO forum.
- c. The WG should liaise with other CHRIS WG's and other IHO and international bodies as appropriate and as instructed by CHRIS.

**4. Composition and Chairmanship**

- a) The WG shall comprise representatives of IHO Member States (M/S), Expert Contributors and Accredited NGIO Observers.
- b) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
- c) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
- d) The WG shall be chaired by a representative of a M/S. The length of tenure of the Chair and Vice-Chair is governed by IHO Technical Resolution T1.1.
- e) Expert Contributors shall seek approval of membership from the Chairman.

- f) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
- g) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- h) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.

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## VII. CHART STANDARDIZATION AND PAPER CHART W.G. (CSPCWG)

### 1. Objectives

- a. To provide a core of expertise on the basic concepts of charting, noting that whatever physical form the chart may take the fundamental concepts and elements of marine cartography remain the same.
- b. To develop and maintain the IHO publications for which it is responsible.

### 2. Authority

The Working Group (WG) is a subsidiary of CHRIS and its work is subject to CHRIS approval. In the interests of procedural efficiency the WG has authority to reach decisions on the maintenance and updating of the documents for which it is responsible and seek direct endorsement of its proposals by IHO Member States via the IHB. This does not include matters that may have a strategic or financial implication for Member States or other interested stakeholders.

### 3. Procedures

- a. The WG's main tasks are to:
  - i. Keep under continuous review the IHO publication M-4 'Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO', in order to advise the IHO on their updating, design and format. Note: M-4 incorporates:
    - INT 1 'Symbols, Abbreviations and Terms used on Charts'
    - INT 2 'Borders, Graduation, Grids and Linear Scales'
    - INT 3 'Use of Symbols and Abbreviations, as recommended by the IHO'
  - ii. Advise the IHO on suggestions put forward by Member States to update M-4, in accordance with IHO Specification B-160, with the goal of achieving the maximum possible adherence by Member States to the Regulations and Specifications.
  - iii. Keep under continuous review the IHO publication M-11 Part A 'Guidance for the Preparation and Maintenance of International Chart Schemes' in order to advise the IHO on its updating.
  - iv. Advise the IHB and Regional Hydrographic Commissions, as appropriate, on the work of Regional Charting Groups (RCG) in order to promote the production of large- and medium-scale international (INT) charts. The role of the WG is purely consultative.
  - v. Offer advice based on its experience to RCG and individual Member States, on chart schemes and cartographic work, in order to encourage adherence to IHO charting standards. The role of the WG is purely consultative.
- b. The WG conducts its business mainly by correspondence. It will also plan to hold meetings at least once every two years, dependant on membership support and business needs.
- c. All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
- d. Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, votes shall be on the basis of one vote per Member State represented.
- e. The WG should identify a work programme for each year, including expected time frame for progressing tasks.
- f. The WG will maintain close liaison with other CHRIS WGs, particularly C&SMWG, and other international and IHO bodies, as appropriate and as instructed by CHRIS.

- g. The WG will report progress to meetings of CHRIS and to Member States through the CHRIS report in the Annual Report of the IHB

#### **4. Composition and Chairmanship**

- a. Membership of the CSPCWG is open to all Member States wishing to be represented. Normally there should be not more than one representative from each Member State.
- b. Accredited Non-Governmental International Organizations observers may participate in CSPCWG activities.
- c. A Chairman and Vice-Chairman will be appointed by election from participant Member States of the WG.
- d. Length of tenure of Chairmanship and Vice-Chairmanship is governed by IHO Technical Resolution T1.1.
- e. The Chairman and Vice-Chairman will decide between themselves the organization of the work entailed in these posts.
- f. The Chairman will monitor membership to ensure that each regional hydrographic commission is invited to be represented on the WG.
- g. A Secretary will be appointed, normally from within the organization of the Chairman of the WG, to ensure the smooth running of business, and to administer consultation and collation of members' views. The Secretary is a member of the WG.

#### **5. Guiding principles**

- a. M-4 Part B provides an internationally-agreed product specification for both national and international (INT) charts at medium- and large-scale. The role of M-4 Part B is twofold, in that it provides:
  - i. an explanation of the general concepts and rationale behind the portrayal of features on charts, much of which is relevant to both digital and paper charts.
  - ii. specific guidance for paper charts, including the use of text and symbology.

*Reference: 17<sup>th</sup> CHRIS Meeting, 5-9 September 2005, Rostock, Germany*

## VIII. IHO-IEC HARMONIZING GROUP ON MARINE INFORMATION OBJECTS (HGMIO)

### 1. Objective

To harmonise the activities of the International Electrotechnical Commission (IEC) and International Hydrographic Organisation (IHO) related to Marine Information Objects (MIOs).

#### Definition:

MIOs consist of supplementary information to be used with an Electronic Chart Display and Information System (ECDIS) that currently, are not Electronic Navigational Chart (ENC) objects or specified navigational elements or parameters. Supplementary means non-mandatory information that is in addition to those required by existing ECDIS-related standards and specifications. MIOs may be either chart- or navigation-related. Some examples of MIOs include: Ice Information; Tides/Water Levels and Current Flow; Oceanographic, Meteorological; Marine Habitats; and Environmental Protection.

### 2. Authority

2.1 The IMO Performance Standards for ECDIS specify for:

#### a) Chart-related information:

- (i) the Electronic Navigational Chart (ENC) contains “*all the chart information necessary for safe navigation, and may contain supplementary information in addition to that contained in the paper chart (e.g., sailing directions) which may be considered necessary for safe navigation*” (Section 2.2).
- (ii) *The chart information to be used in ECDIS conforms to IHO transfer standard for digital hydrographic data (currently, S-57)* (Section 4.1).
- (iii) *IHO recommended colours and symbols (S-52) should be used to represent System ENC information* (Section 8.1).

#### b) Navigation-related information:

- (i) *Radar information or other navigational information may be added to the ECDIS display. However, it should not degrade the SENC information, and should be clearly distinguishable from the SENC information* (Section 6.1).
- (ii) *The colours and symbols other than those mentioned in 8.1 should be used to describe the navigational elements and parameters listed in Appendix 3 and published by IEC Publication 61174* (Section 8.2)

2.2 HGMIO is a subsidiary of two committees:

- (i) IHO Committee on Hydrographic Requirements for Information Systems (CHRIS).
- (ii) IEC Technical Committee No. 80 - Maritime Navigation and Radiocommunications Equipment and Systems (TC80)

### 3. Procedures

The HGMIO should:

- a) Harmonize the activities of IHO and IEC related to the provision and display of supplemental chart- and navigation-related information on ECDIS.
- b) Conduct technical exchange on MIOs with type-approval authorities, ECDIS manufacturers and ECDIS user community.
- c) HGMIO maintains a functional working relationship with:

- (i) IHO CHRIS/Transfer Standard Maintenance and Applications Development WG (TSMAD)
  - (ii) IHO CHRIS/Colours and Symbols Maintenance WG (C&SMWG)
  - (iii) IEC TC80/Working Group 7 (ECDIS)
  - (iv) IEC TC80/Working Group 13 (Navigation Display)
- d) Liaise with other organizations, committees and working groups involved in ECDIS-related matters. This may include:
- IMO/IHO Harmonization Group on ECDIS (HGE)
  - International Association of Lighthouse Authorities (IALA)
  - World Meteorological Organization (WMO)
  - North Atlantic Treaty Organization (NATO)
  - IHO Tidal Committee
- d) When instructed by IHO CHRIS, recommend appropriate changes or additions to:
- 1) IHO transfer standard for digital hydrographic data (currently, S-57)
  - 2) IHO S-52, Appendix 2
- e) When instructed by IEC TC80, recommend new navigation-related symbols to be incorporated into:
- IEC 61174, Annex E (Navigational Symbols for ECDIS)
  - IEC 62288 (Presentation of Navigation-related Information)

#### **4. Composition and chairmanship**

- a) HGMIO should be comprised of members or participants of standing IHO and IEC committees or working groups. The Chairman may also invite subject matter experts to participate as required.
- b) HGMIO should be chaired by an individual who is an active participant in both IHO CHRIS and IEC TC80.

#### **5. Guiding Principles**

Overall, the role of HGMIO is to facilitate the development and implementation of Marine information Objects. To this end there are a number of guiding principles:

- a) The primary focus of developing specifications related to the use Marine Information Objects (MIOs) on ECDIS should be to supplement the minimum chart- and navigation-related information required for safety of navigation.
- b) The HGMIO should monitor other ECDIS-related developments and performance standards that may involve the display of additional navigation-related information. This would include IMO Performance Standards for other navigation systems, such as Automatic Identification Systems (AIS), VTS-related information proposed by IALA, and Displays for the Presentation of Navigation-Related Information by IEC.
- c) The HGMIO should monitor what is occurring related to ECDIS type-approval. This should include such matters as current exceptions granted and future regulations (e.g., carriage requirements).
- d) Recommendations for MIOs should not be finalized without first conducting comprehensive testing and evaluation, validation by ECDIS manufacturers, and at-sea trials with mariners.

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